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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,905	08/08/2001	Ronald R. Breaker	OCR-794B.US	5301

7590 12/28/2004

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C
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EXAMINER	
MCGARRY, SEAN	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,905	BREAKER ET AL.	
	Examiner	Art Unit	
	Sean R McGarry	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7, 9, 11-16 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9,11-16 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The information disclosure statement filed 8/30/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein as C68 has not been considered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9, 11-16 and 19 remain rejected under 35 U.S.C. 102(a) as being anticipated by Araki et al [NAR Vol. 26, (14):3379-3384, 1998].

Araki et al disclose an allosteric hammerhead ribozyme (RNA) that contains an actuator domain (catalytic portion), a receptor domain (aptamer portion), and a communication module that is a "generic" reporter of an occupation state of the receptor domain (stem II). The specification does not provide a specific definition of a "generic

reporter of an occupation state" of a receptor and without such a definition, stem II is considered to be a generic reporter since the stem II portion functions as a reporter when bound to the aptamer's ligand via a conformational change due to the binding of the ligand, for example. Furthermore, the Araki et al reference teaches several GC containing stems and it is the position of the examiner that such a teaching indicates that GC within a stem II generically functions in the compound disclosed by Araki et al (see Table I, for example). In figure 1 of Araki et al it can be seen that the FMN-binding loop (actuator domain) and the stem II domain (communication module/bridging domain) overlap. It is noted that the compound disclosed by Araki et al indicates the presence of FMN via the cleavage of a target nucleic acid upon the binding of FMN to the compound which causes a conformational change in stem II allowing the compound to cleave its target where, when not bound by FMN, the tripartite compound can not cleave its target. The material and methods of Araki et al disclose the process of making the compound where the compound is made via in vitro transcription and it is also disclosed there that the compound were separated on a polyacrylamide gel (a solid support).

Claims 1-4, 6, 7, 9, 11-15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang et al [Chemistry and Biology Vol. 4(6):453-459, 1997].

Tang et al disclose allosteric hammerhead ribozymes (RNA). The ribozymes contain an actuator domain (catalytic portion), a receptor domain (ATP aptamer domain and theophylline aptamer domain) and a bridging domain that contains a

communication module that reports in a generic manner an occupation state of the receptor domain (stem II portion) and are therefore constructs comprising the prescribed functional domains (see figures 1 and 4, for example). At least two of the domains are not overlapping (the catalytic and aptamer domains, for example). It has been disclosed that the actuator activity (cessation or reduction in catalytic activity) is triggered upon a conformational change of the stem II (bridging domain containing a communication module) via the binding of the aptamer domain by its respective ligand. It is noted that both the theophylline and ATP allosteric ribozymes [H8 and H3] contain the same stem II portion (see figures 1 and 4, for example) which clearly shows that the stem II portion function in a generic manner upon the binding of ligands to aptamers operably linked to the generic stem II portion, for example. It is noted that the assays disclosed in the reference indicate that a lack or reduction catalysis of a target RNA indicates the presence of a particular compound. It is disclosed in the Material and methods section of the reference that the ribozymes were made via *in vitro* transcription. It is also disclosed in that section that the ribozymes were isolated from a polyacrylamide gel (solid support).

Applicant's arguments filed 9/29/04 have been fully considered but they are not persuasive. Applicant arguments are focused on the limitation "generic reporter" and it is asserted that this limitation defines over the prior art. Applicant offers in their arguments that the term means that the functionality of the bridging domain is not dependent on being coupled to a particular receptor domain, or of a specific receptor

domain/signaling agent. Applicant points to Example 3 as the "definition" of "generic reporter". The specification states at Example 3 "certain bridging domains or communication modules including the class I communication module (cm+FMN1) depicted in Figure 8 appear to serve as generic reporters of the occupation state of different appended aptamers regardless of the particular ligand specificity." First, it is not clear how this provides a definition of "generic reporter" per se, since it appears that this language appears to describe an observed activity in an experiment. It is noted that the context of its use [generic reporter] is different in the instant claims since, for example, the generic reporter of the instantly claimed invention is a "generic reporter" to the receptor domain of the claimed construct. It does not refer to being generic to any receptor domain, for example. The "definition" referred to in the specification does not resolve this issue. The Araki reference is maintained for his reason and since applicant has not even addressed the "GC" reasoning provided in the rejection of record. Applicant appears to believe that the "definition" relied on in the specification requires that the "generic reporter" be capable of functioning with apparently all known and unknown aptamers. It is first noted that the specification clearly does provide such a sweeping definition. Tang et al clearly disclose a "generic reporter". The stem II of Tang et al clearly functions generically in both an ATP and theophylline allosteric ribozymes. There is no reasonable basis to insist that generic means "all". Applicant argues different stem structures of Tang et al. These domains are not even relied upon in the rejection of record and applicants arguments directed to those domains in their arguments of "generic reporter" are clearly misplaced. Applicant makes a bald

statement that the disclosure of the interchangeability of two aptamers is not sufficient to disclose a generic reporter. Again, it is clear that the stem of Tang et al is generic for at least the two species they disclose [ATP and theophylline].

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean R McGarry whose telephone number is (571) 272-0761. The examiner can normally be reached on M-Th (6:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John LeGuyader can be reached on (571) 272-0760. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sean R McGarry
Primary Examiner
Art Unit 1635

SRM